

STATUS OF THE CLAIMS

1. (Original) An isolated nucleic acid sequence comprising a first nucleic acid sequence selected from the group consisting of:

i. a nucleic acid sequence that hybridizes under conditions of high stringency to a second nucleic acid sequence comprising an Ftn2 gene wherein a product encoded by the first nucleic acid sequence functions in division of a photosynthetic prokaryote or a plastid, and wherein the Ftn2 gene comprises SEQ ID NO: 1, 3, or 4;

ii. a nucleic acid sequence that hybridizes under conditions of high stringency to a second nucleic acid sequence encoding an Ftn2 polypeptide, wherein a product encoded by the first nucleic acid sequence functions in division of a photosynthetic prokaryote or a plastid and wherein the encoded Ftn2 polypeptide comprises amino acid sequence SEQ ID NOs: 2 or 5;

iii. an Ftn2 gene, wherein the Ftn2 gene comprises SEQ ID NO: 1, 3, or 4;

iv. a nucleic acid sequence encoding an Ftn2 polypeptide, wherein the Ftn2 polypeptide comprises amino acid sequence SEQ ID NOs: 2 or 5;

v. a nucleic acid sequence comprising a mutant Ftn2 gene, wherein the mutant Ftn2 gene comprises at least one mutation and wherein the non-mutant Ftn2 gene comprises SEQ ID NO:9 or 10;

vi. a nucleic acid sequence that hybridizes under conditions of high stringency to a second nucleic acid sequence comprising an ARC5 gene, wherein a product encoded by the first nucleic acid sequence functions in division of a photosynthetic prokaryote or a plastid and wherein the ARC5 gene comprises SEQ ID NO: 11 or 14;

vii. a nucleic acid sequence that hybridizes under conditions of high stringency to a second nucleic acid sequence encoding an ARC5 polypeptide, wherein a product encoded by the first nucleic acid sequence functions in division of a photosynthetic prokaryote or a plastid and wherein the ARC5 polypeptide comprises SEQ ID NO:13, 16, 17, or 18;

viii. an ARC5 gene, wherein the ARC5 gene comprises SEQ ID NO: 11 or 14;

- ix. a nucleic acid sequence encoding an ARC5 polypeptide, wherein the ARC5 polypeptide comprises an amino acid sequence SEQ ID NOs: 13, 16, 17, or 18;
- x. a nucleic acid sequence comprising a mutant ARC5 gene, wherein the mutant ARC5 gene comprises at least one mutation and the non-mutant ARC5 gene comprises SEQ ID NO: 11 or 14;
- xi. a nucleic acid sequence that hybridizes under conditions of high stringency to a second nucleic acid sequence comprising an Fzo-like gene, and wherein a product encoded by the first nucleic acid sequence functions in division and/or morphology of a photosynthetic prokaryote or a plastid, and wherein the Fzo-like gene comprises SEQ ID NO: 19 or 22;
- xii. a nucleic acid sequence that hybridizes under conditions of high stringency to a second nucleic acid sequence encoding an Fzo-like polypeptide, wherein a product encoded by the first nucleic acid sequence functions in division of a photosynthetic prokaryote or a plastid and wherein the Fzo-like polypeptide comprises SEQ ID NO:21 or 24;
- xiii. an Fzo-like gene, wherein the Fzo-like gene comprises SEQ ID NO: 19 or 22;
- xiv. a nucleic acid sequence comprising a sequence encoding an Fzo-like polypeptide, wherein the Fzo-like polypeptide comprises amino acid sequence SEQ ID NO: 21 or 24;
- xv. a nucleic acid sequence that hybridizes under conditions of high stringency to a second nucleic acid sequence comprising an Fzo-like gene, and wherein a product encoded by the first nucleic acid sequence functions in division and/or morphology of a photosynthetic prokaryote or a plastid, and wherein the Fzo-like gene comprises SEQ ID NO:19 or 22, and wherein the first nucleic acid sequence further comprises SEQ ID NO:25 at the 3' terminus;
- xvi. a nucleic acid sequence that hybridizes under conditions of high stringency to a second nucleic acid sequence encoding an Fzo-like polypeptide, wherein a product encoded by the first nucleic acid sequence functions in division of a photosynthetic prokaryote or a plastid and wherein the Fzo-like polypeptide comprises

SEQ ID NO:21 or 24, and wherein the first nucleic acid sequence further comprises SEQ ID NO:25 at the 3' terminus;

xvii. a nucleic acid sequence comprising a sequence encoding an Fzo-like polypeptide, wherein the Fzo-like polypeptide comprises amino acid sequence SEQ ID NO: 21 or 24; and

xviii. a nucleic acid sequence comprising a mutant Fzo-like gene, wherein the mutant Fzo-like gene comprises at least one mutation and the non-mutant Fzo-like gene comprises SEQ ID NO: 19 or 22.

2. (Canceled)

3. (Canceled)

4. (Original) The nucleic acid sequence of Claim 1 operably linked to a heterologous promoter.

5. (Original) A vector comprising the nucleic acid sequence of Claim 1.

6. (Original) A vector comprising the nucleic acid sequence of Claim 1 operably linked to a heterologous promoter.

7. (Canceled)

8. (Original) A cell transformed with a heterologous gene comprising the nucleic acid sequence of Claim 1.

9. (Original) The cell of claim 8, wherein the organism is a plant cell or a microorganism.

10. (Original) A plant transformed with a heterologous gene comprising the nucleic acid sequence of Claim 1.
11. (Original) A plant cell transformed with a heterologous gene comprising the nucleic acid sequence of Claim 1.
12. (Original) A plant seed transformed with a heterologous gene comprising the nucleic acid sequence of Claim 1.
13. (Currently Amended) A cell transformed with a heterologous gene comprising the nucleic acid sequence of Claim [[2]]1.
14. (Original) The cell of claim 13, wherein the cell is a plant cell or a microorganism.
15. (Currently Amended) A plant transformed with a heterologous gene comprising the nucleic acid sequence of Claim [[2]]1.
16. (Currently Amended) A plant cell transformed with a heterologous gene comprising the nucleic acid sequence of Claim [[2]]1.
17. (Currently Amended) A plant seed transformed with a heterologous gene comprising the nucleic acid sequence of Claim [[2]]1.
18. (Canceled)
19. (Canceled)
20. (Canceled)

21. (Canceled)

22. (Original) A plant seed transformed with a heterologous gene comprising the nucleic acid sequence of Claim 4.